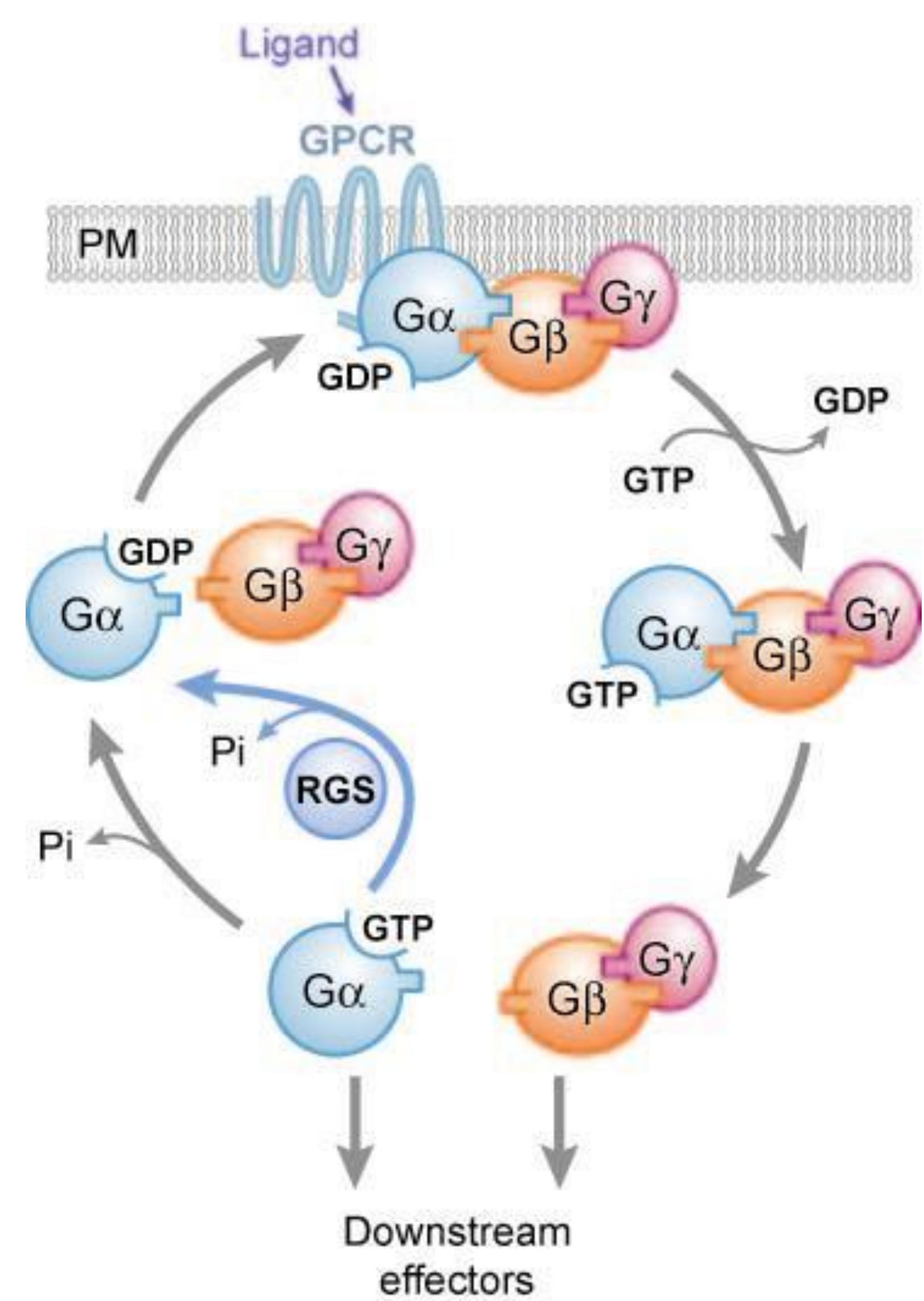


Objective

Use Video Bioinformatics to facilitate high throughput analysis of mutants in order to place them in functional categories. Specifically, I would like to determine how proteins interact in heterotrimeric G protein signaling pathways.

G protein signaling pathway



- **Heterotrimeric G proteins:**
 - 3 Gα
 - *GNA-1, GNA-2, GNA-3*
 - 1 Gβ
 - *GNB-1*
 - 1 Gγ
 - *GNG-1*
- 5 RGS
 - *RGS 1-5*
- Over 25 GPCRs

Figure 1: Canonical G protein signaling pathway mechanism in *N. crassa*

Polarized growth

Neurospora crassa grows via three ways; polar extension, branching, and hyphal fusion. All three major mechanisms involve the maintenance of polarity. Analysis of polarized growth of *rgs* mutants is the focus of this study.

Hyphal growth

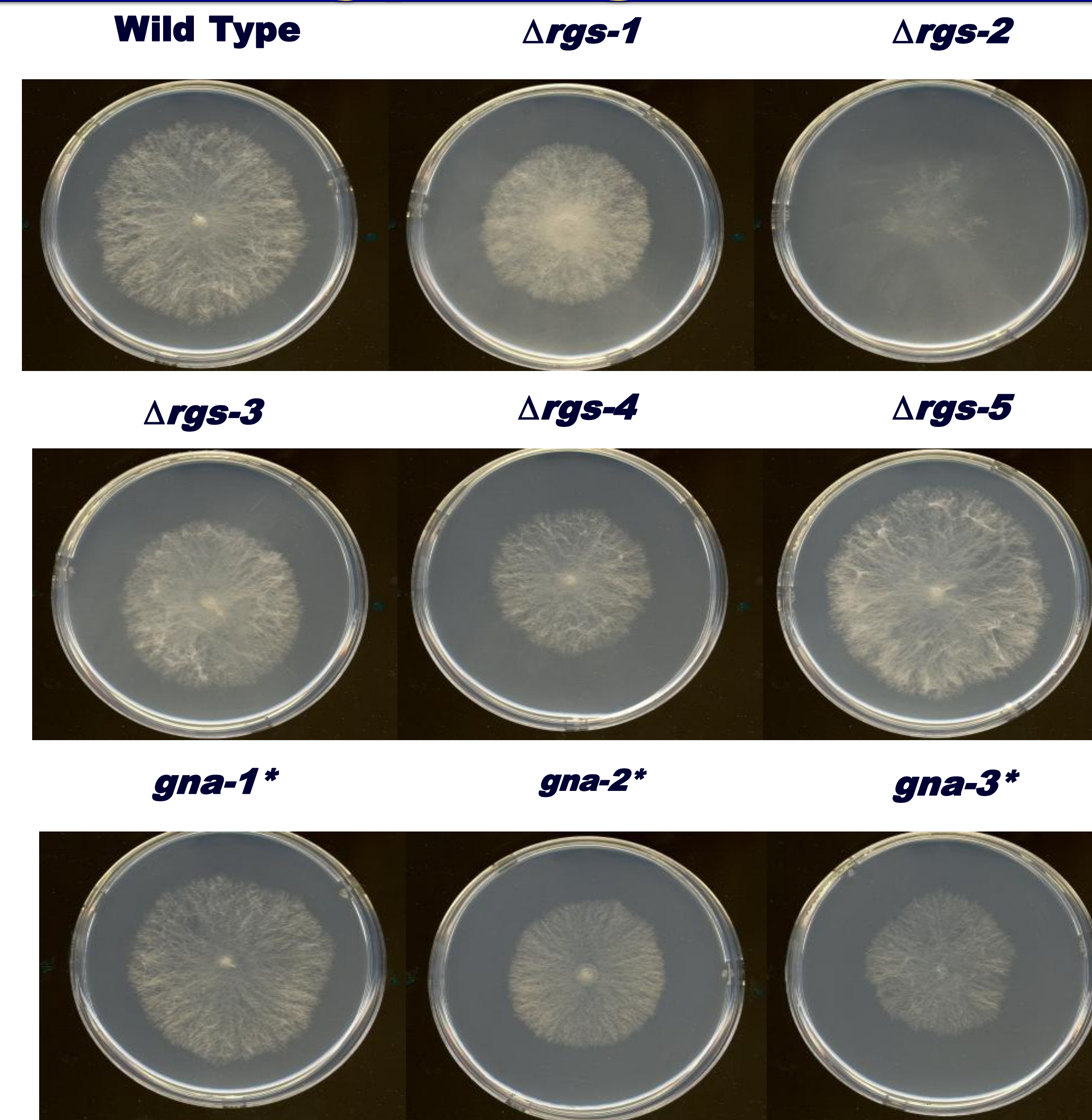


Figure 2: Basal hyphae. Strains were inoculated in the center of an agar plate, and cultured for 24 hours at 30 C in the dark.

Aerial hyphae growth

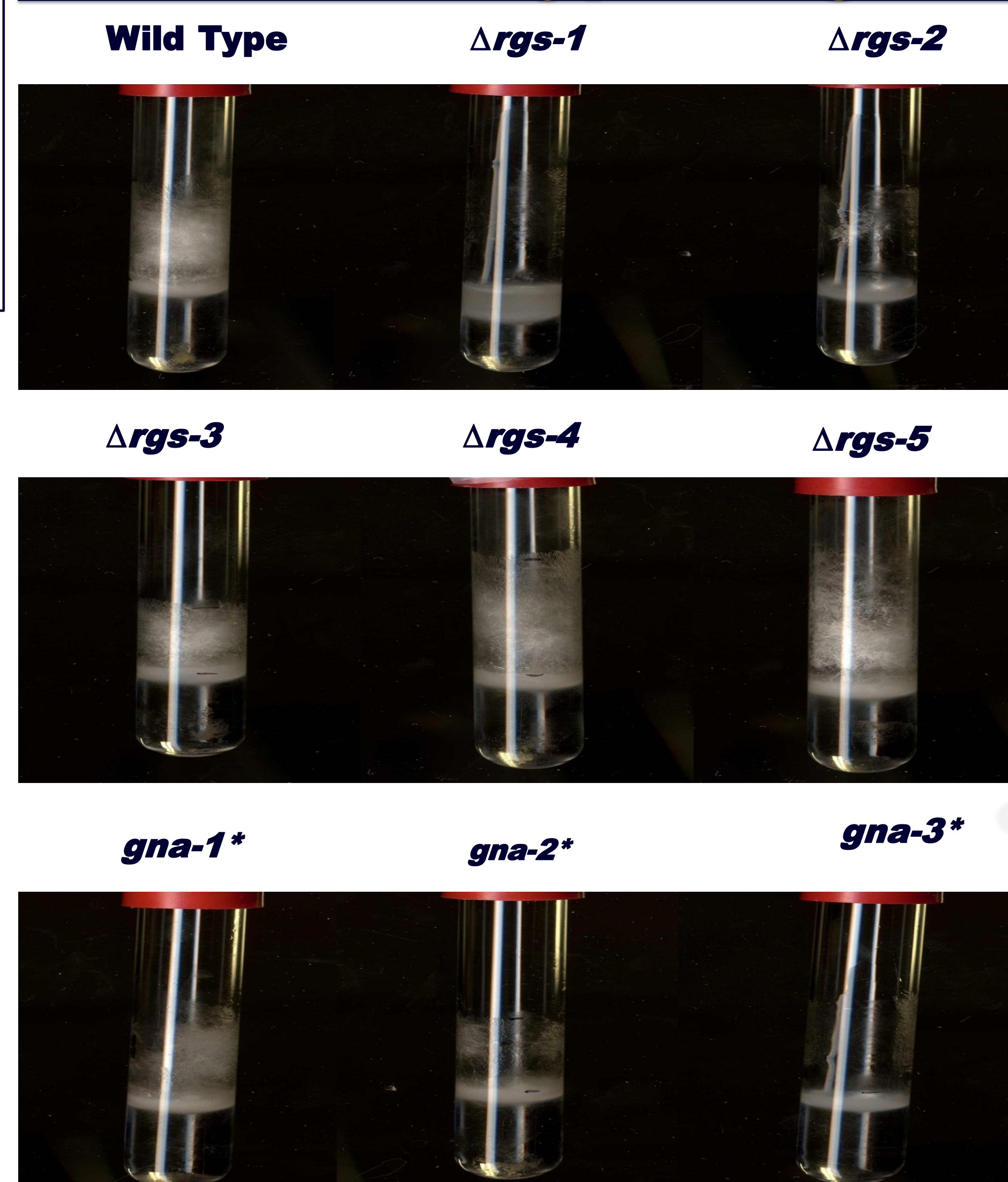


Figure 3: Aerial Hyphae. Strains were inoculated in 2 mL liquid VM medium, and cultured for 72 hours at 23 C in the dark.

Spore germination

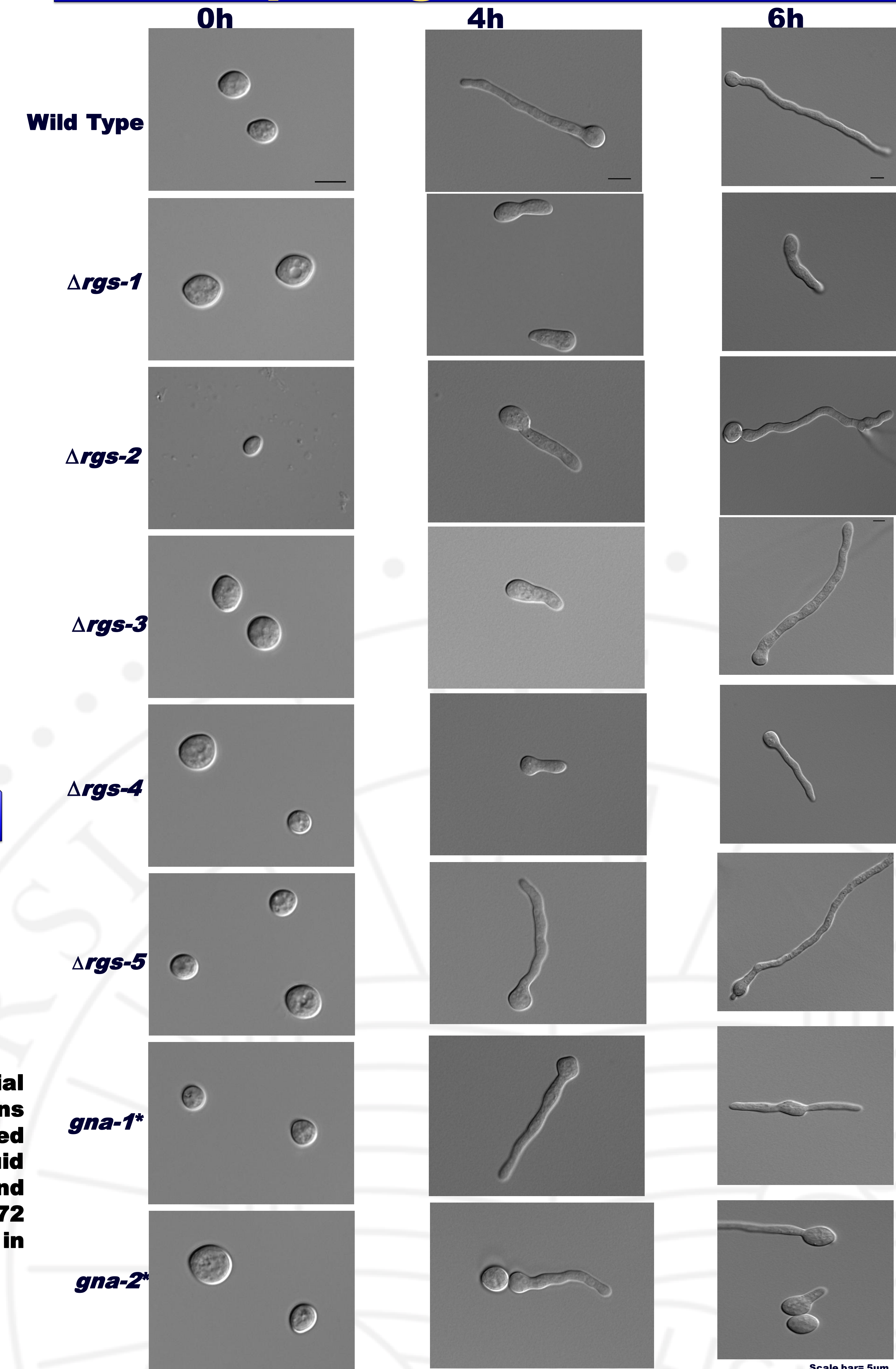


Figure 4: Strains were inoculated on VM-agarose plates. Plates were incubated at 30°C in the dark. Differential interference contrast (DIC) images were taken with an 1X71 Olympus microscope.

Acknowledgements

Support for this work was provided by NSF IGERT: Video Bioinformatics Grant DGE 0903667

